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## New species of *Cassida* L. from Madagascar (*Coleoptera: Chrysomelidae: Cassidinae*)

LECH BOROWIEC

Zoological Institute, University of Wrocław, Sienkiewicza 21, 50-335 Wrocław, Poland, e-mail:  
[cassidae@biol.uni.wroc.pl](mailto:cassidae@biol.uni.wroc.pl)

**ABSTRACT.** Fifteen new species of *Cassida* L. are described from Madagascar: *C. acutangula*, *C. ambrica*, *C. atrorubra*, *C. coelebs*, *C. dolens*, *C. hovacassiformis*, *C. madagascariaca*, *C. montana*, *C. pauliani*, *C. pubipennis*, *C. quadricolorata*, *C. scymnoides*, *C. seniculoides*, *C. subacuticollis*, and *C. umbonata*.

**Key words:** Entomology, taxonomy, new species, *Coleoptera*, *Chrysomelidae*, *Cassidinae*, *Cassida*, Madagascar.

### INTRODUCTION

The genus *Cassida* L. with 369 described species is the most speciose within the *Cassidinae*; 56 of them were recorded from Madagascar (BOROWIEC 1999). The Madagascan fauna is distinct, only one species is common for both Ethiopian and Madagascan provinces. Madagascan members of the genus are the most heterogenous, and several species groups are endemic to the island. In the fifties Dr. W.D. HINCKS obtained from Dr. R. PAULIAN, the Director of the Institut de Recherche Scientifique de Madagascar, a moderately large collection of *Cassidinae* for the study. He intended to review them in two works but because of his premature death only the first part of the project was published (HINCKS 1962). Shortly before his death he selected and labelled several species of *Cassida* as new to the science and sent types to the British, Manchester and Paris Museums. I recovered a part of this material in 1986 and supplemented it with specimens from my collection and described several new species of *Cassida* from Madagascar (BOROWIEC 1988). During my stay at the Paris Museum in 1997 I found the

rest of the material studied by HINCKS. Descriptions of 15 new species based on this material, supplemented by several specimens from my collection are given below.

### *Cassida acutangula* n. sp.

#### ETYMOLOGY

Named after its acute pronotal angles.

#### DIAGNOSIS

With *C. pauliani* n. sp. and *C. umbonata* n. sp. *C. acutangula* forms a very distinct group of large species (length exceeding 7.5 mm) with base of pronotum bisinuately emarginate and pronotal angles strongly protruding anterad. *C. umbonata* distinctly differs in the presence of large conical postscutellar tubercle (in both *C. acutangula* and *pauliani* elytral disc is regularly convex with no tubercles). *C. pauliani* is very similar to *C. acutangula* but differs in elytral longitudinal costa distinctly lower, obtuse (sharp in *acutangula*), and sparser elytral puncturation; base of pronotum in *C. pauliani* is slightly wider than base of elytra (as wide as in *acutangula*) and deeper emarginate, pronotal angles more protruding posterad but blunt.

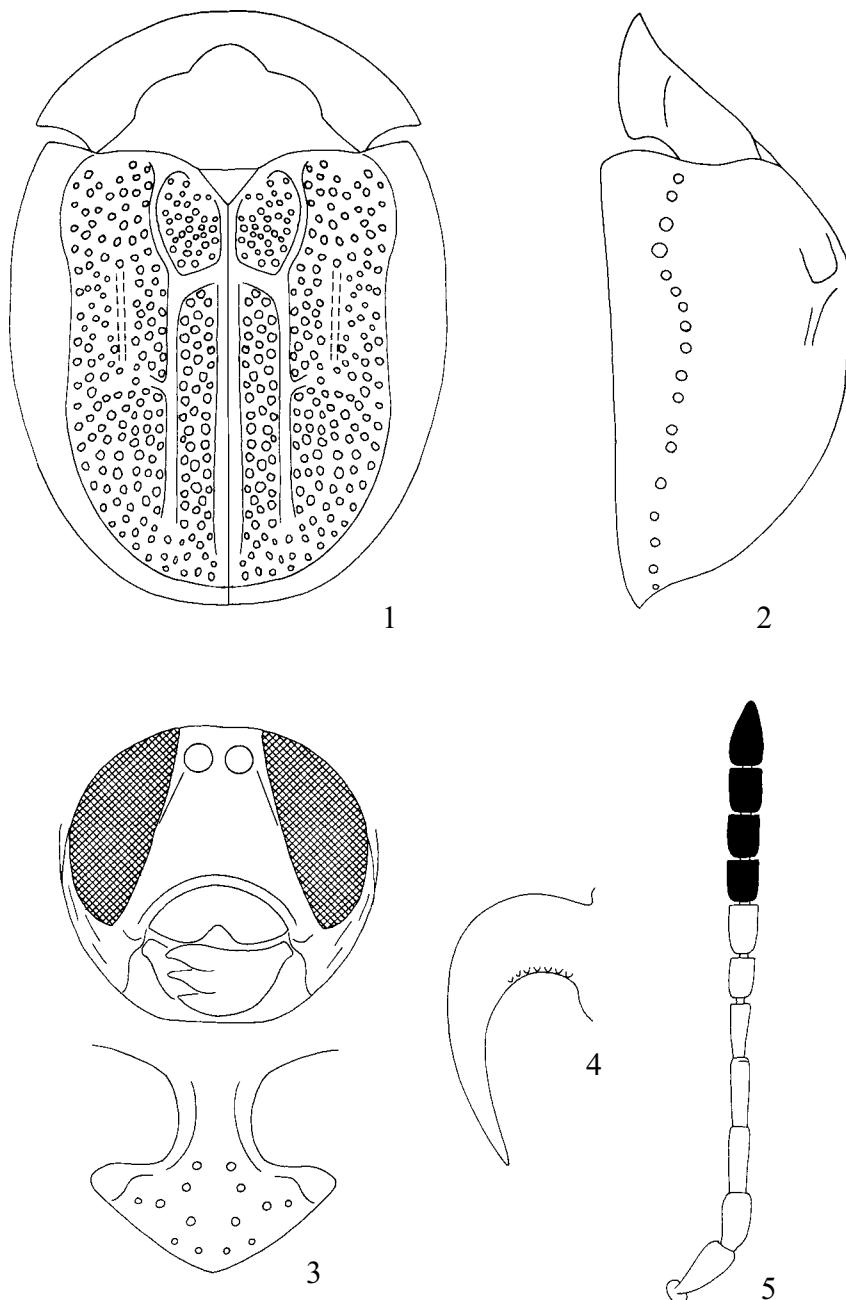
#### DESCRIPTION

Length: 8.9 mm, width: 6.4 mm, length of pronotum: 2.9 mm, width of pronotum: 5.8 mm, length/width ratio: 1.39, pronotum width/length ratio: 2.00.

Pronotum and scutellum yellowish-brown. Elytra yellowish-brown with black marble pattern. Explanate margin of elytra yellowish-brown, without spots. Clypeus, prosternum and legs yellowish brown, metasternum and abdomen slightly darker, brown. Antennal segments 1-7 yellowish, remainder black except yellowish apex of underside of the last segment.

Pronotum very broad, twice wider than long, with maximum width at base, as wide as base of elytra; base on sides moderately emarginate, angles of pronotum angulate, moderately protruding posterad. Disc moderately convex, indistinctly bordered from explanate margin but with well separated area above head. Surface of disc, except area above head, with irregular, mostly longitudinal folds, appears wrinkled. Explanate margin without tendency to form a gutter, slightly declivous, its surface slightly irregular but not appearing rugose or wrinkled.

Scutellum triangular with rounded apex, without punctures or sulci. Base of slightly narrower base of pronotum, humeral angles subangulate, margin behind humerus not emarginate (fig. 1). Disc regularly convex (fig. 2), at top slightly depressed, with sharp, longitudinal costa in position of interval 3<sup>rd</sup>. In postscutellar point costae joined by transverse fold, thus postscutellar area with H-shaped elevation. Postscutellar impressions shallow but distinct, bordered externally by elytral costa, no principal or lateral impressions. Puncturation in postscutellar



1-5. *Cassida acutangula*: 1 - dorsal view, 2 - lateral view, 3 - head and prosternum, 4 - tarsal claw, 5 - antenna

impressions and between costa and suture irregular, coarse and dense, punctures almost touching each other. Puncturation between costa and margin of disc in area close to costa irregular, in area close to margin with tendency to form regular rows, submarginal and marginal rows completely regular. Punctures coarse and dense, almost touching each other, intervals hardly visible, surface appears irregular to rugose. Punctures in submarginal row slightly coarser than in rows above, in marginal row only slightly coarser than in submarginal one. Explanate margin 0.38 times as wide as width of disc of each elytron, declivous, its surface irregular but not appearing rugose. Apex of elytral epipleura with sparse erect hair.

Clypeus 1.2 times wider than long, flat, clypeal lines fine but distinct on whole length of clypeus (fig. 3). Surface of clypeal disc smooth, slightly dull, without punctures. Labrum emarginate to half length. Prosternal process strongly expanded apically, its apex punctate. Antennae moderately elongate, length ratio of antennal segments: 100:63:93:93:80:60:67:60:63:63:115. Segment 3 c. 1.5 times longer than 2 (fig. 5). Claws large, simple (fig. 4).

#### TYPES

Holotype: "Morondava, forêt sud de Befasy, I-56, R.P. [R. PAULIAN]" "Type" "Muséum Paris, Coll. Générale" "*Cassida acutangula* HINCKS TYPE, det. W.D. HINCKS" (preserved in Muséum National d'Histoire Naturelle, Paris).

### *Cassida pauliani* n. sp.

#### ETYMOLOGY

Dedicated to Dr. R. PAULIAN, the Director of the Institut de Recherche Scientifique de Madagascar.

#### DIAGNOSIS

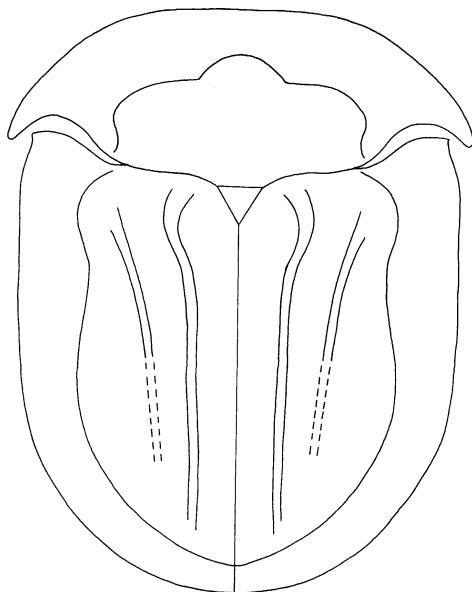
See diagnosis of *C. acutangula*.

#### DESCRIPTION

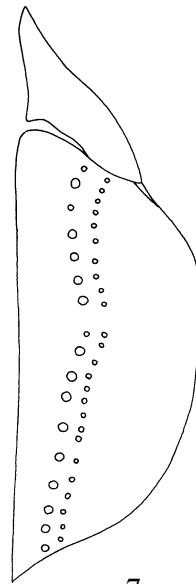
Length: 7.4-7.6 mm, width: 5.4-5.6 mm, length of pronotum: 2.7 mm, width of pronotum: 5.3-5.65 mm, length/width ratio: 1.36, pronotum width/length ratio: 1.96-2.09.

Pronotum and scutellum yellowish-brown, apices of pronotal angles black. Elytra yellowish-brown with black marble pattern but black spots are sparser distributed than in the preceding species. Explanate margin of elytra yellowish-brown, without spots. Clypeus, prosternum and legs yellowish brown, metasternum and abdomen slightly darker, brown. Antennal segments 1-7 yellowish, remainder black except yellowish apex of underside of the last segment.

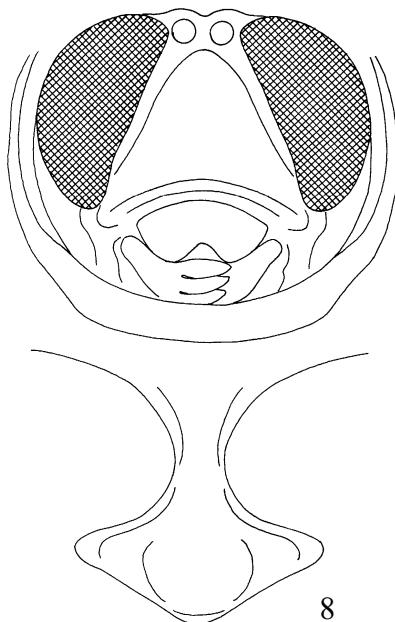
Pronotum very broad, twice wider than long, with maximum width at base, slightly wider base of elytra (fig. 6); base on sides deeply emarginate, angles



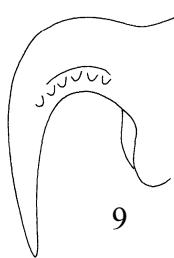
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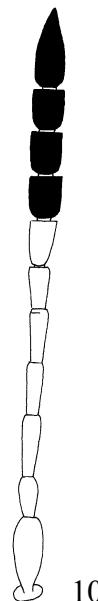
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6-10. *Cassida pauliani*: 6 - dorsal view, 7 - lateral view, 8 - head and prosternum, 9 - tarsal claw, 10 - antenna

strongly protruding posterad but with blunt apices. Disc moderately convex, indistinctly bordered from explanate margin but with well separated area above head. Surface of disc, except area above head, with irregular folds, appears wrinkled; the folds slightly more irregular than in the preceding species with no tendency to form longitudinal striation. Explanate margin without tendency to form a gutter, slightly declivous, its surface slightly irregular only in lateral parts.

Scutellum triangular with rounded apex, without punctures or sulci. Base of elytra slightly narrower than base of pronotum, humeral angles subangulate, margin behind humerus slightly emarginate. Disc regularly convex (fig. 7), less depressed than in the preceding species, with obtuse, longitudinal costa in position of interval 3<sup>rd</sup>. In postscutellar point costae joined by L-shaped fold, lower than in the preceding species, thus H-shaped figure in postscutellar area less distinct. Postscutellar impressions shallow but distinct, bordered externally by elytral costa, no principal or lateral impressions. Punctuation in postscutellar impressions and between costa and suture mostly irregular, coarse and dense, distance between punctures from 0.5 to as wide as puncture diameter. Punctuation between costa and margin of disc in area close to costa more regular than in the preceding species. Punctures coarse and dense, distance between them 0.5-1.2 times wider than puncture diameter, intervals linear but visible, their surface does not appear irregular or rugose. Punctures in submarginal row slightly coarser than in rows above, in marginal row only slightly coarser than in submarginal one. Explanate margin 0.38 times as wide as width of disc of each elytron, slightly more declivous than in the preceding species, its surface only slightly irregular and not appearing rugose. Apex of elytral epipleura with sparse erect hair.

Clypeus 1.4 times wider than long, flat, clypeal lines fine but distinct on whole length of clypeus (fig. 8). Surface of clypeal disc smooth, slightly dull, without punctures. Labrum emarginate to 0.4 length. Prosternal process strongly expanded apically, its apex punctate. Antennae moderately elongate, length ratio of antennal segments: 100:53:92:73:73:55:57:60:62:56:107. Segment 3 c. 1.5 times longer than 2 (fig. 10). Claws large, simple (fig. 9).

#### TYPES

Holotype: "Morondava, forêt sud de Befasy, I-56, R.P. [R. PAULIAN]" "Type" "Muséum Paris, Coll. Générale" "*Cassida pauliani* HINCKS TYPE, det. W.D. HINCKS" "*Rileyocassis pauliani* n. sp. det. L. BOROWIEC" (preserved in Muséum National d'Histoire Naturelle, Paris); paratype: same data (Muséum National d'Histoire Naturelle, Paris); paratype: "MADAGASCAR, between Morondava and Marovoay" (preserved at the Department of Systematic Zoology and Zoogeography, University of Wrocław).

*Cassida umbonata* n. sp.

## ETYMOLOGY

Named after large postscutellar tubercle.

## DIAGNOSIS

With two preceding species it belongs to the unique group of species with pronotum bisinuately emarginate basally. *C. umbonata* distinctly differs from both its relatives in larger size (exceeding 11 mm, it is the largest Madagascan species of the genus; in *C. acutangula* and *C. pauliani* length below 9 mm) and elytral disc with large conical postscutellar tubercle (no tubercle in both relatives).

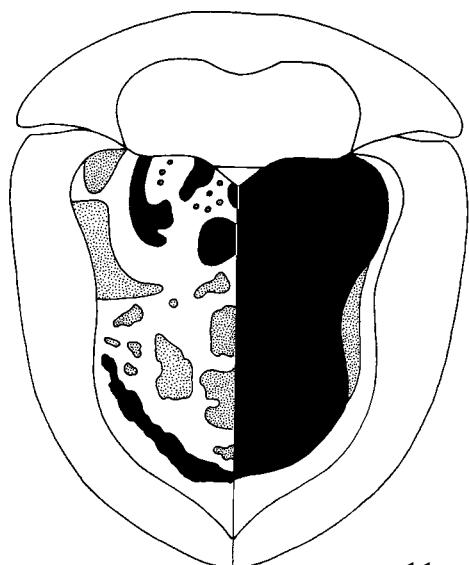
## DESCRIPTION

Length: 11.6 mm, width: 9.2-94 mm, length of pronotum: 3.7 mm, width of pronotum: 8.4-8.5 mm, length/width ratio: 1.23-1.26, pronotum width/length ratio: 2.27-2.30.

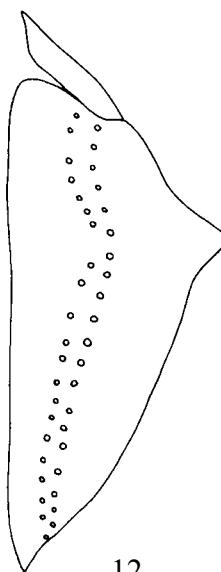
Pronotum and scutellum yellow. Elytra with brown to black pattern, in the palest form the pattern forms numerous spots as in fig. 11 occupying almost whole disc surface except two external intervals, in the darkest form almost whole disc brown to black except two marginal intervals. Explanate margin of elytra, clypeus, antennae, ventrites and legs uniformly yellow.

Pronotum very broad, c. 2.3 times wider than long, with maximum width at base, as wide as base of elytra; base on sides distinctly emarginate, angles strongly protruding posterad, angulate (fig. 11). Disc slightly convex, indistinctly bordered from explanate margin but with well separated area above head. Surface of disc mostly smooth, only in central part indistinctly wrinkled, slightly dull. Explanate margin without tendency to form a gutter, slightly declivous, its surface smooth, slightly dull.

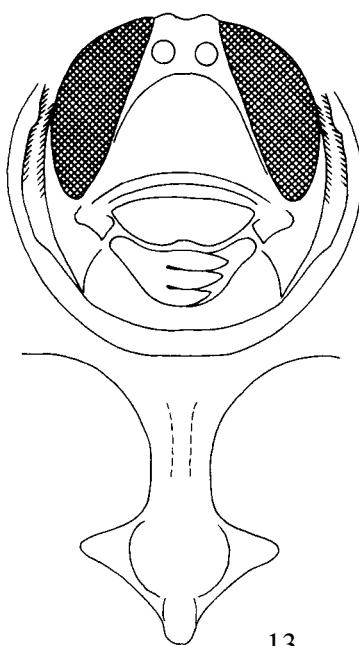
Scutellum triangular with rounded apex, without punctures or sulci. Base of elytra as wide as base of pronotum, humeral angles form an angle of 110°, obtuse, margin behind humerus not emarginate. Disc strongly convex, with large, conical, postscutellar tubercle, elytral profile behind top of the tubercle concave (fig. 12). Postscutellar impressions shallow but distinct, no principal or lateral impressions. Punctuation of disc regular, very coarse and dense, distance between punctures 0.5-0.8 times wider than puncture diameter. In form with yellow and brown to black pattern yellow parts are slightly more convex than dark pattern, form a relief; in this form elytral rows of punctures partly broken or disordered by the relief. Intervals in sutural half of disc as wide as to slightly wider than rows, in lateral part of disc slightly narrower than rows, except broad interval 9 which is c. twice wider than rows. Surface of intervals irregular, some parts of intervals convex, surface of elytral disc appears irregular. Punctures in submarginal row slightly coarser than in rows above, in marginal row slightly coarser than in



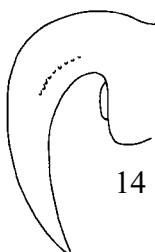
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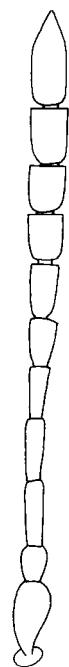
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11-15. *Cassida umbonata*: 11 - dorsal view, 12 - lateral view, 13 - head and prosternum, 14 - tarsal claw, 15 - antenna

submarginal one. Marginal row in area below humeral callus strongly impressed, forms a concavity. Explanate margin broad, c. twice narrower than width of disc of each elytron, declivous, its surface only slightly irregular. Apex of elytral epipleura with sparse erect hair.

Clypeus c. 1.6 times wider than long, flat, clypeal lines very fine but visible on whole length of clypeus (fig. 13). Surface of clypeal disc smooth, slightly dull, without punctures. Labrum emarginate to 1/6 length. Prosternal process strongly expanded apically, its apex impunctate, only sides of apex with surface slightly irregular. Antennae moderately elongate, length ratio of antennal segments: 100:46:86:83:73:66:73:66:63:66:133. Segment 3 c. 1.8 times longer than 2 (fig. 15). Claws large, simple (fig. 14).

#### TYPES

Holotype: "Hera Ankazoabo" "Instytut Scientifique Madagascar" "*Cassida umberonata* HINCKS PARATYPE, det. W.D. HINCKS" (preserved at Manchester Museum); 2 paratypes: the same locality (Muséum National d'Histoire Naturelle, Paris); paratype: "MADAGASCAR, Hera, Ankazoabo" (Department of Systematic Zoology and Zoogeography, University of Wrocław).

### *Cassida hovacassiformis* n. sp.

#### ETYMOLOGY

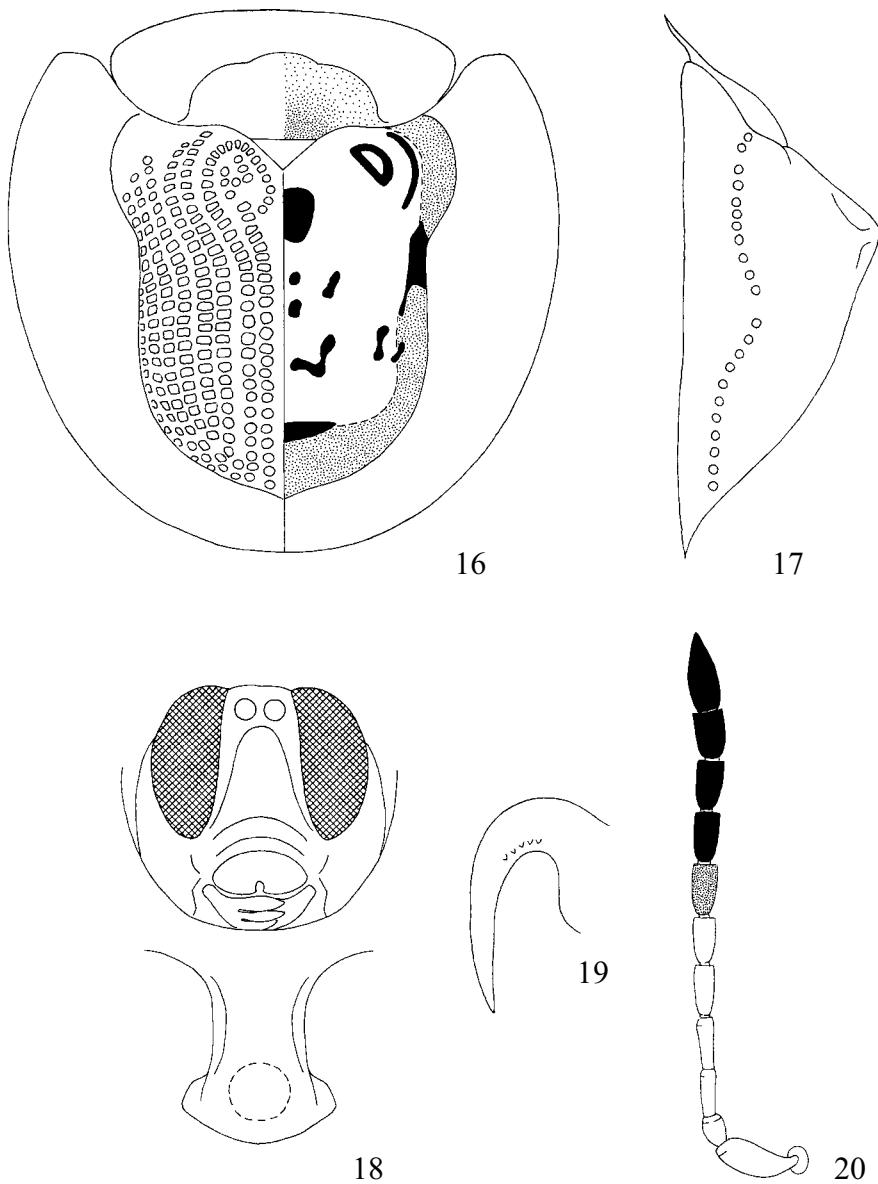
Named after its external similarity to the members of the genus *Hovacassis* Sp.

#### DIAGNOSIS

It is a very distinct species, at first glance more similar to the members of the Madagascan genus *Hovacassis* Sp. than to other members of the genus *Cassida* L. Like members of the genus *Hovacassis* it has a large body, elytral base much wider from pronotum, and elytral disc with conical postscutellar tubercle but differs in stouter antennae, pubescent from fifth segment (in *Hovacassis* antennae are extremely thin, filiform, pubescent from fourth segment). From other Madagascan members of the genus *Cassida* it differs in antennae pubescent from fifth segment (usually from sixth and seventh segment in other species) and elytra with distinct conical postscutellar tubercle (only *C. umberonata* has also large postscutellar tubercle but differs in pronotum bisinuately emarginate basally and pronotal angles protruding posterad while in *C. hovacassiformis* pronotum is elyptical with rounded sides). Elytral colouration of *C. hovacassiformis* is unique.

#### DESCRIPTION

Length: 8.2 mm, width: 8.0 mm, length of pronotum: 2.7 mm, width of pronotum: 5.2 mm, length/width ratio: 1.03, pronotum width/length ratio: 1.93.



16-20. *Cassida hovacassiformis*: 16 - dorsal view, 17 - lateral view, 18 - head and prosternum, 19 - tarsal claw, 20 - antenna

Pronotum yellow, central part of disc purple-red. Scutellum yellow. Elytral disc mostly yellow with purple-red and black pattern. Purple-red forms band along sides occupying humeral callus, two marginal rows and marginal interval, except their apical parts, and apical part of disc except extreme apex. Black forms spot on front part of postscutellar tubercle, spot behind humerus, and stripes in postscutellar impression, basal part of third row,  $3/4$  and  $5/6$  length of interval 2, and small spots in  $1/3$  length of row 4, and in the middle of rows 5-7, also some punctures in first row marked with black. Explanate margin of elytra yellow except purple-red internal margin. Clypeus, ventrites and legs uniformly yellow. Antennal segments 1-6 yellow, segment 7 brownish, segments 8-11 black.

Pronotum broad, c. 1.9 times wider than long, elliptical, with maximum width in anterior  $2/5$  length, sides rounded (fig. 16). Disc slightly depressed, on sides distinctly bordered from explanate margin by deep sulcus. Surface of disc, except area above head and lateral lobes, with regular longitudinal striation. Striate part of the disc glabrous, lateral lobes and area above head slightly dull. Explanate margin subhorizontal, its surface slightly irregular and dull but not appear rugose.

Scutellum triangular, without punctures or sulci. Base of elytra much wider than base of pronotum, humeral angles subangulate, margin behind humerus not emarginate. Disc strongly convex, with large, conical, postscutellar tubercle, elytral profile behind top of the tubercle concave (fig. 17). Postscutellar impressions shallow, bordered externally by slightly elevated second interval. Punctuation of disc regular, very coarse and dense, punctures almost touching each other. Intervals very narrow, in sutural half of disc c. twice narrower than rows, only interval 3 behind the middle as wide as rows, in lateral part of disc intervals linear. Interval 2 on almost whole length, and interval 4 behind the middle slightly more elevated than neighbouring intervals. Elevated parts of disc appear slightly glabrous, flat parts slightly dull. Marginal interval slightly narrower than submarginal one. Punctures in marginal row c. twice coarser than in submarginal one, form short transverse sulci. Explanate margin very broad, as wide as  $5/6$  width of disc of each elytron, subhorizontal, its surface slightly irregular and dull. Apex of elytral epipleura mostly bare, only apical margin close to suture with row of short, erect hair.

Clypeus narrow, as long as wide, flat, with only few very shallow punctures, dull; clypeal lines fine, but visible on whole length of clypeus, converging in a triangle with obtuse apex (fig. 18). Labrum emarginate to  $1/4$  length. Prosternal collar distinct, prosternal process moderately expanded apically, its apex impunctate with large, circular, deep impression. Antennae moderately elongate, length ratio of antennal segments: 100:39:57:63:65:57:63:61:63:65:111 (fig. 20). Segment 3 c. 1.44 times longer than 2, segment 4 only slightly longer than 3 (in members of the genus *Hovacassis* segment 4 is usually twice or more longer than segment 3, especially in males). Claws large, simple, micropectinate (fig. 19).

## TYPE

Holotype: "MADAGASCAR, Wald bei Fito, 6.7.1897" (preserved at the Department of Systematic Zoology and Zoogeography, University of Wrocław).

***Cassida ambrica* n. sp.**

## ETYMOLOGY

Named after its type locality Mt. d'Ambre.

## DIAGNOSIS

It belongs to the group of large species with length exceeding 8.0 mm, elytra strongly convex, unicolours yellow or with small black spots, and elongate antennae. The group includes also *C. rugipennis* (Boh.) and *C. contracta* (Sp.). *C. ambrica* distinctly differs in explanate margin with humeral and posterolateral spots (immaculate in both its relatives), almost horizontal, forming a shallow gutter (slightly declivous with no tendency to form a gutter in the other two species).

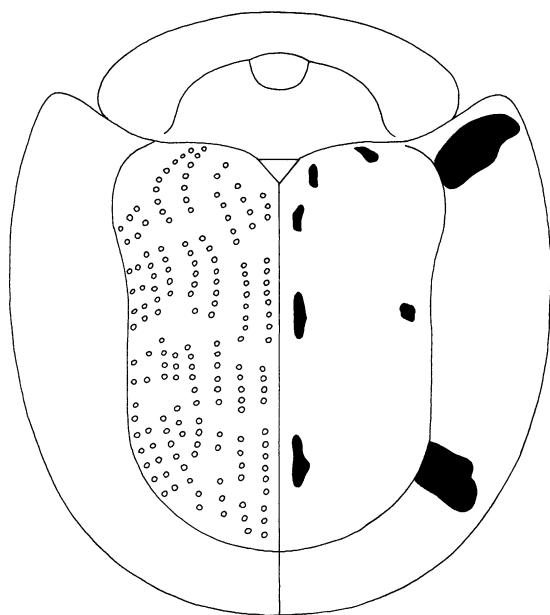
## DESCRIPTION

Length: 9.0 mm, width: 7.9 mm, length of pronotum: 2.6 mm, width of pronotum: 4.9 mm, length/width ratio: 1.14, pronotum width/length ratio: 1.88.

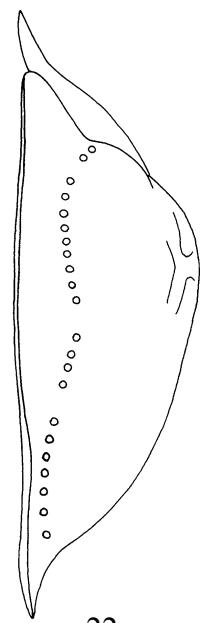
Pronotum uniformly yellow. Scutellum yellow. Elytral disc mostly yellow, with few black stripes: in the middle of basal margin of elytra, in front of the middle of interval 7<sup>th</sup>, and on first interval - close to scutellum, in impression of postscutellar elevation, slightly in anterior half of the interval and in 2/3 of its length; small black spot. The pattern is not symmetrical and on right and left elytron the same spots can be of different shape and size. Explanate margin with humeral and posterolateral black spots of irregular borders, humeral spot not extending to anterior margin of the explanate margin, posterolateral spot not extending to margin of elytra. Clypeus, ventrites, legs and antennae uniformly yellow.

Pronotum broad, c. 1.9 times wider than long, ellyptical, with maximum width in the middle, sides rounded (fig. 21). Disc convex, distinctly bordered from explanate margin, but without sulci; without separated part above head, on sides, on border line between disc and explanate margin with small, round impression. Surface of disc smooth and glabrous. Explanate margin subhorizontal, its surface smooth and glabrous.

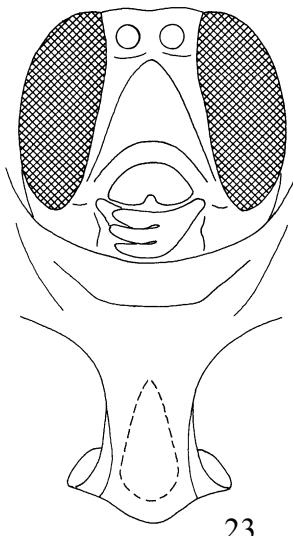
Scutellum triangular, without punctures or sulci. Base of elytra strongly wider than base of pronotum, humeral angles moderately protruding anterad, subangulate, margin behind humerus not emarginate. Disc regularly convex, without tubercles, only with low transverse elevation in postscutellar point (fig. 22); also other parts of disc with few very low transverse elevations. Postscutellar and principal impressions distinct, lateral impression shallow. Puncturation of disc regular, but rows partly broken by elytral elevations. Punctures moderately



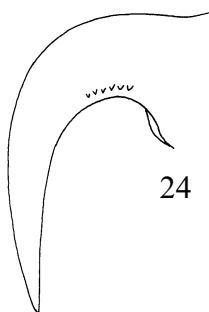
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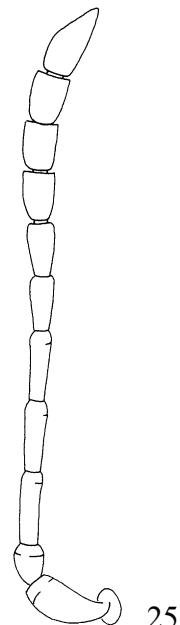
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25

21-25. *Cassida ambrica*: 21 - dorsal view, 22 - lateral view, 23 - head and prosternum, 24 - tarsal claw, 25 - antenna

coarse, on sides slightly coarser than in sutural half of disc, moderately dense with distance between punctures from as wide as to twice wider than puncture diameter. Intervals four to five times wider than rows, only interval 5<sup>th</sup> distinctly narrower, as wide as to twice wider than rows, flat, second interval distinctly widened posterad. Marginal interval only slightly wider than submarginal one. Punctures in marginal row c. twice coarser than in submarginal one, disposed regularly. Whole surface of intervals smooth, slightly glabrous. Explanate margin broad, as wide as 2/3 width of disc of each elytron, horizontal, forms a shallow gutter, its surface smooth, slightly glabrous. Apex of elytral epipleura with sparse erect hairs.

Clypeus moderately broad, c. 1.4 wider than long, distinctly elevated apically, impunctate, glabrous; clypeal lines very fine, well visible only in basal part of clypeus (fig. 23). Labrum emarginate almost to half length. Prosternal collar distinct, prosternal process strongly expanded apically, its apex impressed, impunctate. Antennae moderately elongate, length ratio of antennal segments: 100:47:84: 82:80:58:61:58:55:58:100 (fig. 25). Segment 3 c. 1.8 times longer than 2, segment 4 only slightly shorter than 3. Claws large, simple (fig. 24).

#### TYPE

Holotype: "MADAGASCAR, Mt. d'Ambre" (preserved at the Department of Systematic Zoology and Zoogeography, University of Wrocław).

### *Cassida madagascarica* n. sp.

#### ETYMOLOGY

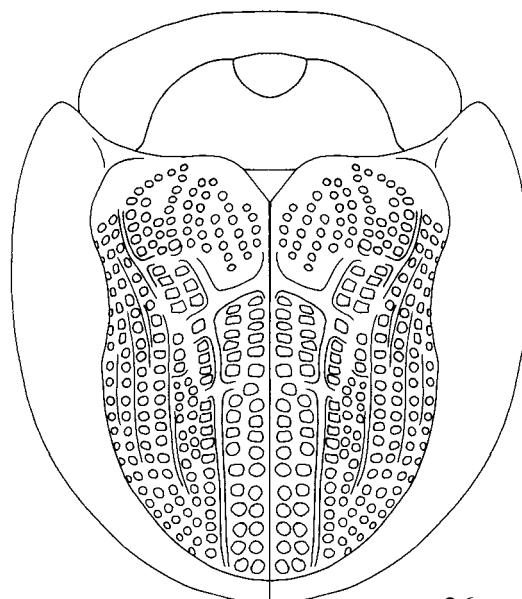
Named after its terra typica.

#### DIAGNOSIS

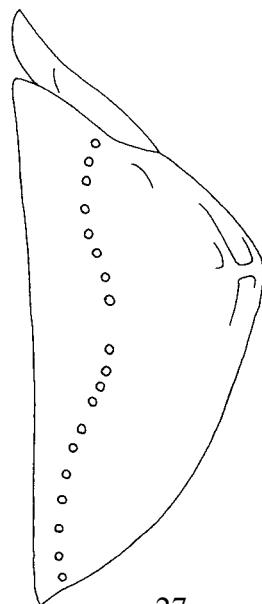
Strongly convex, almost hemispherical body, pronotum with broadly rounded sides and yellowish-brown dorsal colouration place it close only to *C. dulcis* (BOH.), *C. rufomicans* FRM. and *C. sanguineoguttata* SP. The first species differs in smooth pronotal disc (longitudinally striate in *madagascarica*) and elytra with yellow pattern (without pattern in *madagascarica*); *C. sanguineoguttata* differs in smaller body and elytra with red spots (immaculate in *madagascarica*). *C. rufomicans* is the most similar and at first glance looks like a miniature of *C. madagascarica*; it differs in smaller size (length to 6.3 mm, usually smaller), less impressed postscutellar impressions and lower postscutellar elevation, and more regular puncturation in posterolateral part of elytral disc.

#### DESCRIPTION

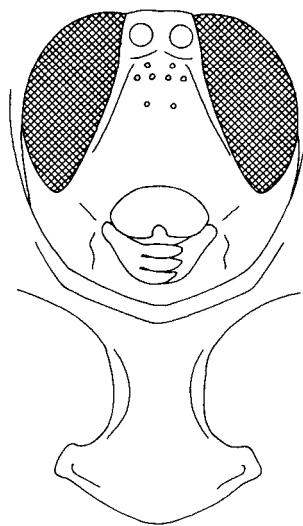
Length: 7.4 mm, width: 6.3 mm, length of pronotum: 2.4 mm, width of pronotum: 4.75 mm, length/width ratio: 1.17, pronotum width/length ratio: 1.98. Body almost hemispherical.



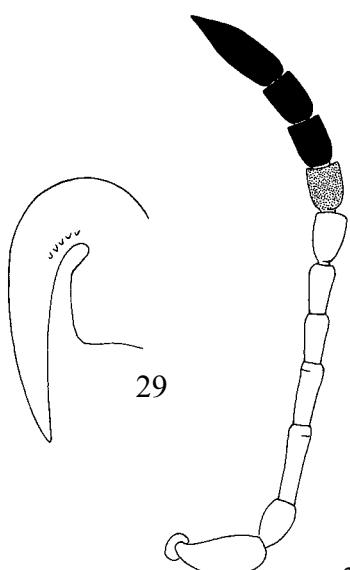
26



27



28



29

30

26-30. *Cassida madagascarica*: 26 - dorsal view, 27 - lateral view, 28 - head and prosternum, 29 - tarsal claw, 30 - antenna

Pronotum uniformly yellowish-brown. Scutellum yellowish-brown. Elytral disc with marble, pale and darker brown pattern; explanate margin yellowish brown. Clypeus, ventrites, and legs yellowish brown; antennal segments 1-6 yellowish brown, segment 8 dark brown, segments 9-11 black.

Pronotum broad, c. twice wider than long, ellyptical, with maximum width in the middle, sides broadly rounded (fig. 26). Disc depressed, without border between disc and explanate margin; with slightly separated part above head. Surface of disc with regular longitudinal striation, except almost smooth area above head. Explanate margin slightly declivous, its surface in internal parts, close to disc, slightly irregular, external parts smooth. Whole surface of disc slightly glabrous, except partly dull area above head.

Scutellum triangular, without punctures or sulci. Base of elytra distinctly wider than base of pronotum, humeral angles moderately protruding anterad, subangulate, margin behind humerus not emarginate. Disc strongly, slightly irregularly convex, without tubercles, but with moderately high H-shaped elevation in postscutellar point (fig. 27). Postscutellar and principal impressions distinct, deep, no lateral impression; postscutellar impression bordered externally by elevated second interval only in posterior part of the elevation. Punctuation of disc mostly regular, only in posterolateral part of disc irregular. Punctures very coarse and dense, punctures almost touching each other. Punctures in anterior half of disc slightly coarser than in posterior half. Intervals mostly invisible or linear, only second interval distinct on almost whole length elevated, forms a sharp costa; also interval 4<sup>th</sup> in posterior half of disc forms a fine costa. Marginal interval distinct. Punctures in marginal row c. twice to thrice coarser than in submarginal one, disposed regularly. Surface of disc appears irregular. Explanate margin broad, as wide as half width of disc of each elytron, declivous, its surface irregular. Whole surface of elytra slightly glabrous. Apex of elytral epipleura bare.

Clypeus moderately broad, c. 1.2 wider than long, flat, smooth, glabrous; clypeal lines fine, visible on whole length of clypeus (fig. 28). Labrum emarginate to 1/3 length. Prosternal collar short, prosternal process strongly expanded apically, slightly convex, punctate, its surface appears irregular. Antennae moderately elongate, length ratio of antennal segments: 100:53:82:68:62:56:56:53:56:56:100. Segment 3 c. 1.6 times longer than 2, and 1.2 times longer than 4 (fig. 30). Claws with large basal tooth (fig. 29).

#### TYPE

Holotype: "MADAGASCAR" (preserved at the Department of Systematic Zoology and Zoogeography, University of Wrocław).

*Cassida coelebs* n. sp.

## ETYMOLOGY

Latin “*coelebs*” means single; Hincks probably proposed the name because he had at his disposal only a single specimen of the new species.

## DIAGNOSIS

It belongs to the group of the smallest Madagascan species close to *C. inconstans* FRM. *C. coelebs* is the only species of the group with yellow pronotum and elytra black with yellow relief. Other species of the group have dorsum uniformly yellow (*C. brooksi* BOR.), or yellow with small black spots (form of *C. brooksi*), or yellow with reddish band along sides of elytra and few black spots (*C. inconstans* and *C. fuscomaculata* BOR.), or else with almost whole pronotal disc and elytra black (*C. nigroflavens* BOR.). *C. dorsovittata* BOH. of a different group is of similar size but differs in finer elytral puncturation, and dorsal colouration usually uniformly yellow to green, or with yellow to brown bands along sides.

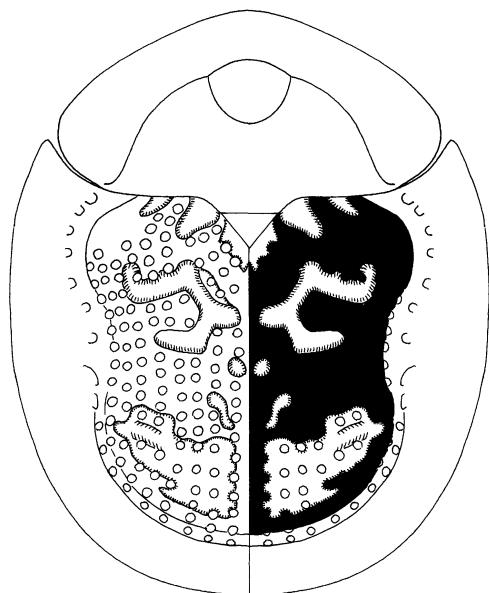
## DESCRIPTION

Length: 4.2-4.8 mm, width: 3.3-3.8 mm, length of pronotum: 1.6-1.8 mm, width of pronotum: 2.65-3.05 mm, length/width ratio: 1.20-1.29, pronotum width/length ratio: 1.66-1.75.

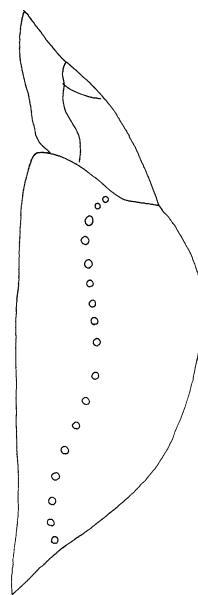
Pronotum uniformly yellowish-brown. Scutellum yellowish-brown. Elytral disc black with yellow relief as in fig. 31. Marginal interval completely, and submarginal interval partly yellow. Clypeus, ventrites and legs yellow. Antennae yellow or last one to three segments slightly infuscate.

Pronotum moderately broad, c. 1.7 times wider than long, elliptical but with posterior margin slightly more rounded than anterior one, with maximum width slightly before the middle, sides broadly rounded (fig. 31). Disc slightly convex, indistinctly bordered from explanate margin, sides of disc with small impression; with slightly separated part above head. Surface of disc with small, moderately dense punctures, on sides of disc surface appears slightly irregular and slightly dull, in front of scutellum mostly smooth and slightly glabrous, also area above head smooth but slightly dull. Explanate margin slightly declivous, its surface smooth, from slightly dull to slightly glabrous.

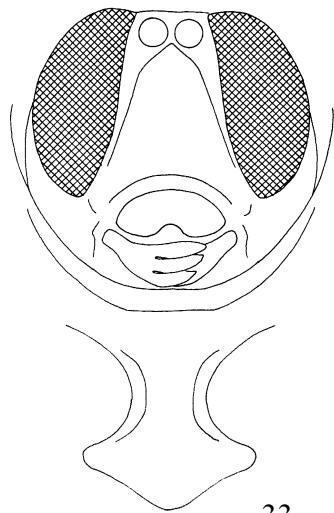
Scutellum triangular, without punctures or sulci. Base of elytra slightly wider than base of pronotum, humeral angles distinctly protruding anterad, angulate, margin behind humerus not emarginate. Disc regularly convex, without tubercles (fig. 32), elytral relief in postscutellar point has tendency to forms irregular H-shaped elevation. Postscutellar impressions distinct, bordered externally by elytral relief, no lateral impression. Puncturation of disc regular, in anterior part of disc row partly broken by elytral relief. Punctures coarse and dense, distance between them from twice narrower to almost as wide as puncture diameter.



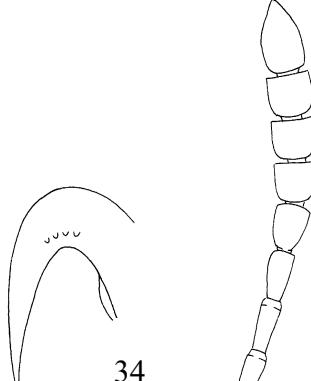
31



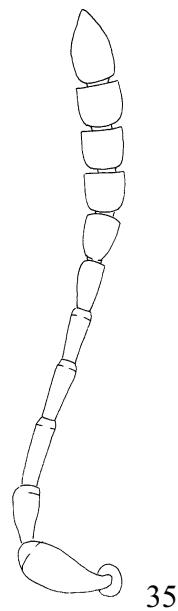
32



33



34



35

31-35. *Cassida coelebs*: 31 - dorsal view, 32 - lateral view, 33 - head and prosternum, 34 - tarsal claw, 35 - antenna

Punctures in anterior half of disc as coarse as on slope. Intervals narrow, c. as wide as rows or slightly narrower, only marginal interval slightly wider than rows, in sutural half of disc intervals slightly convex, on sides flat. Punctures in marginal row c. twice coarser than in submarginal one, disposed regularly. Pale parts of disc glabrous, dark parts slightly dull. Explanate margin moderately broad, slightly narrower than half width of disc of each elytron, declivous, its surface slightly irregular but glabrous. Apex of elytral epipleura in fresh specimens with sparse, erect hairs, in old dried specimens they are mostly broken and epipleura appear bare.

Clypeus elongate, c. as long as wide, flat, smooth, with few small, shallow punctures; clypeal lines fine, visible on whole length of clypeus (fig. 33). Labrum emarginate to 1/4 length. Prosternal collar short, prosternal process strongly expanded apically, flat, punctate, its surface appears slightly irregular. Antennae short, length ratio of antennal segments: 100:62:70:70:55:50:50:52:53:110. Segment 3 c. slightly longer than 2, and as long as 4 (fig. 35). Claws with very small basal tooth, appear simple (fig. 34).

#### TYPES

Holotype: "Antsingy de Bekopaka, forêt VII-49, RP [R. PAULIAN], Inst. Scient. Madagascar" "Type" "Muséum Paris, Coll. Générale" "*Cassida coelebs* HINCKS TYPE, det. W.D. HINCKS" (preserved in Muséum National d'Histoire Naturelle, Paris); 4 paratypes: "MADAGASCAR, Anakarahitra" (preserved at the Department of Systematic Zoology and Zoogeography, University of Wrocław).

### *Cassida subacuticollis* n. sp.

#### ETYMOLOGY

Named after its subacute to angulate angles of pronotum.

#### DIAGNOSIS

It belongs to the *C. goudoti* species group which is characterized by elytral disc black with yellow relief forming numerous convex spots. The group comprises *C. goudoti* (BOH.), *C. andapaensis* BOR., *C. suaveola* (SP.) and *C. verrucata* (BOH.). The last three species distinctly differ in smaller size (body length below 5.0 mm, in *C. subacuticollis* exceeding 5.5 mm); *C. verrucata* differs also in ventrites always uniformly yellow (partly black in *subacuticollis*), *C. andapaensis* and *C. suaveoloides* differ also in at least last antennal segment black (antennae uniformly yellow in *subacuticollis*). *C. goudoti* has similar body size but distinctly differs in pronotal sides rounded (subacute to angulate in *subacuticollis*) and black apical antennal segments.

## DESCRIPTION

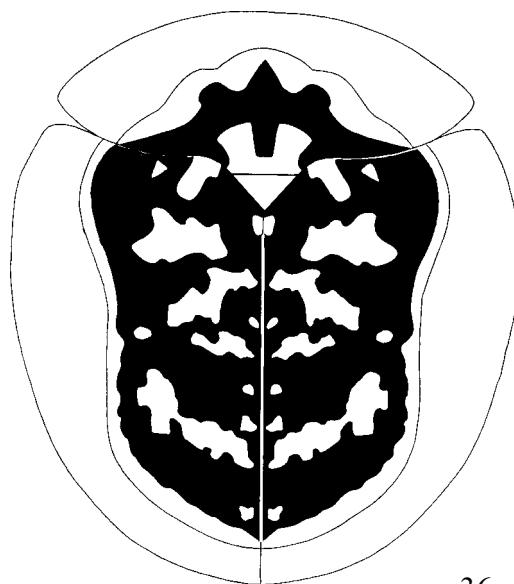
Length: 5.7 mm, width: 4.80-5.05 mm, length of pronotum: 2.0 mm, width of pronotum: 4.1 mm, length/width ratio: 1.13-1.19, pronotum width/length ratio: 2.05.

Pronotal disc yellow with large basal black spot marked in front of scutellum by V-shaped yellow spot. Anterior margin of the black spot irregular, with few emarginations. Explanate margin of pronotum uniformly yellow. Scutellum yellow, sometimes with black anterior corners. Elytral disc mostly black with yellow relief of several spots: two at base of each elytron, two small close to scutellar apex, large H-shaped in postscutellar point, large irregularly V-shaped on slope, moderately large on lateral fold of disc and numerous small between H-shaped and V-shaped sculptures. Marginal interval uniformly yellow. Clypeus yellow, prosternum partly to almost completely black, metasternum from uniformly yellow to mostly black. Legs and antennae uniformly yellow.

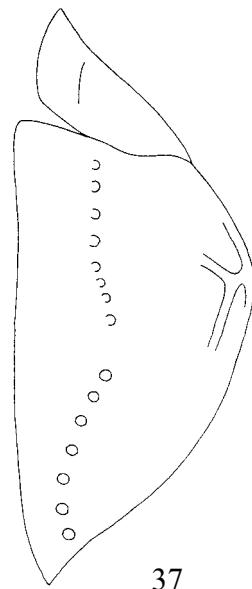
Pronotum broad, c. twice wider than long, ellyptical, with maximum width in the middle, sides subacute to angulate (fig. 36). Disc slightly depressed, indistinctly bordered from explanate margin, but sides of disc with small impression; part above head only slightly separated. Surface of disc glabrous, with fine, sparse puncturation, in holotype appears smooth, in paratype punctures on sides of disc slightly elongate and surface appears slightly striate. Explanate margin smooth, glabrous.

Scutellum triangular, without punctures or sulci. Base of elytra c. as wide as base of pronotum, humeral angles moderately protruding anterad, obtuse, margin behind humerus not emarginate. Disc regularly convex, without tubercles, but with moderately high H-shaped elevation in postscutellar point (fig. 37). Postscutellar impressions distinct, bordered externally by elytral relief. Puncturation of disc regular, but rows partly interrupted by yellow elytral relief. Punctures moderately coarse but dense, distance between them from slightly narrower to twice wider than puncture diameter. Punctures in anterior half of disc c. twice coarser than on slope and in postscutellar impressions. Intervals c. twice wider than rows, mostly flat, only second interval on almost whole length and fourth interval behind the middle slightly elevated. Marginal interval distinct. Punctures in marginal row much coarser than in submarginal one, disposed regularly, in posthumeral part very deep. Surface of disc appears regular. Explanate margin broad, c. twice narrower than width of disc of each elytron, slightly declivous, its surface slightly irregular, glabrous. Apex of elytral epipleura with several short, erect hairs.

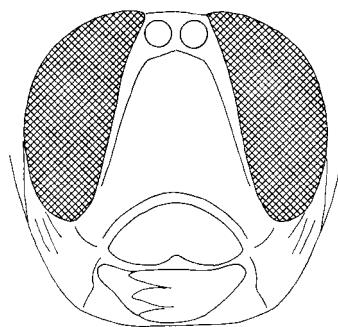
Clypeus moderately broad, c. 1.2 wider than long, flat, smooth, glabrous; clypeal lines fine, visible on whole length of clypeus (fig. 38). Labrum emarginate to 1/4 length. Prosternal collar short, prosternal process strongly expanded apically, in the middle slightly convex, alae impressed, with irregular surface. Antennae slim, length ratio of antennal segments: 100:57:89:89:79:57:64:64:67:64:110. Segment 3 c. 1.6 times longer than 2, and as long as 4 (fig. 40). Claws with small basal tooth (fig. 39).



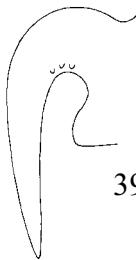
36



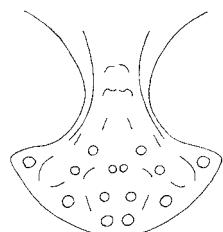
37



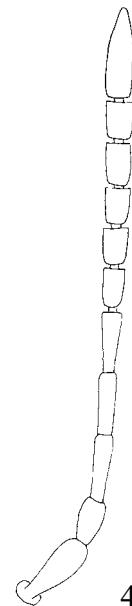
38



39



38



40

36-40. *Cassida subacuticollis*: 36 - dorsal view, 37 - lateral view, 38 - head and prosternum, 39 - tarsal claw, 40 - antenna

## TYPE

Holotype: "M<sup>1</sup> Tsaratanana, 1500 m, forêt de mousses, X-49, R.P. [R. PAULIAN], Inst. Scient. Madagascar" "Type" "Muséum Paris, Coll. Générale" "*Cassida subacuticollis* HINCKS TYPE, det. W.D. HINCKS" (preserved in Muséum National d'Histoire Naturelle, Paris); paratype: "MADAGASCAR, Amber Geb." (preserved at the Department of Systematic Zoology and Zoogeography, University of Wrocław).

***Cassida montana* n. sp.**

## ETYMOLOGY

Named after its habitat, mountain moss forest.

## DIAGNOSIS

It is a distinct species, the only with moderate size combined with uniformly black pronotal and elytral discs. The general body shape, structure of pronotum, clypeus, antennae and tarsal claws place it close to the *C. goudoti* group, but members of the group differ in elytral disc black with yellow relief. At first glance it is similar to *C. subacuticollis* n. sp. but the latter differs (except pattern) in pronotal sides distinctly angulate (narrowly rounded in *montana*), base of elytra only slightly wider than base of pronotum (distinctly wider in *montana*) and coarser elytral puncturation, almost even on whole disc surface (in *montana* puncturation is finer and sparser especially on apex of disc). *C. goudoti* (BOH.) differs, except pattern, in broadly rounded pronotal sides and at least two last antennal segments black (in *C. montana* antennae uniformly yellow). Dark forms of *C. collucens* (SP.) and *C. latecincta* (FRM.) differ in wrinkled or distinctly irregular pronotal surface (sparsely punctate but smooth between punctures in *montana*).

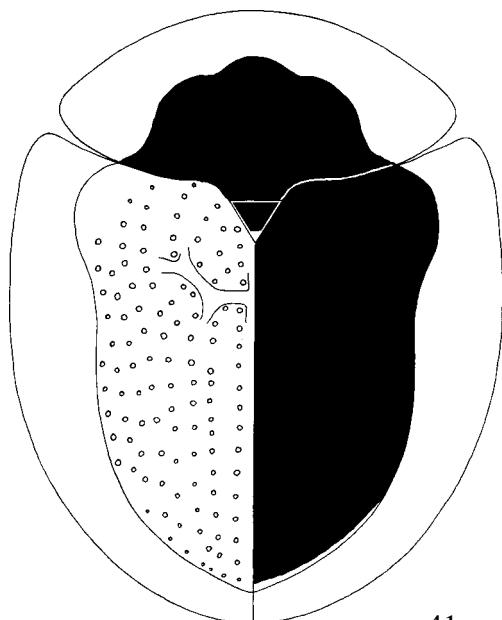
## DESCRIPTION

Length: 6.2 mm, width: 5.2 mm, length of pronotum: 2.1 mm, width of pronotum: 4.15 mm, length/width ratio: 1.19, pronotum width/length ratio: 1.98.

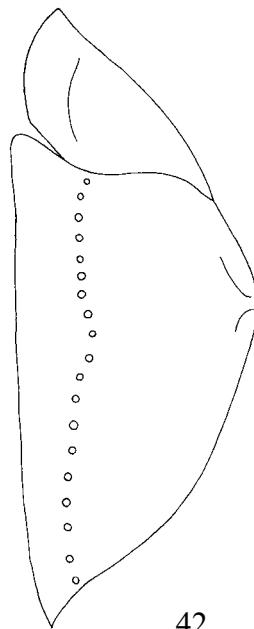
Pronotal disc black, explanate margin uniformly yellow. Scutellum black, apex with indistinct yellowish-brown spot. Elytral disc black, only apical part of marginal interval yellow. Explanate margin yellow. Clypeus yellow, prosternum and metasternum black, abdomen yellow. Antennae and legs uniformly yellow.

Pronotum broad, c. twice wider than long, elyptical, with maximum width in the middle, sides narrowly rounded (fig. 41). Disc depressed, with slightly marked border between disc and explanate margin, on sides of disc with two small impressions; without separated part above head. Surface of disc with small sparse punctures, but smooth and glabrous. Explanate margin smooth and glabrous, impunctate.

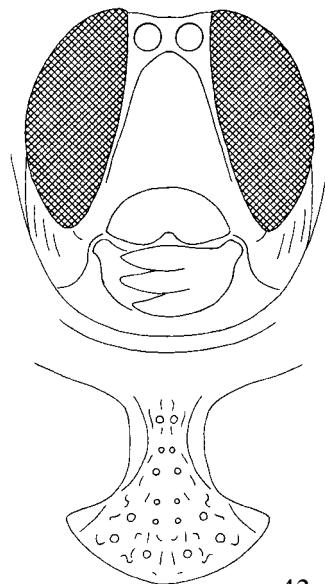
Scutellum triangular, without punctures or sulci. Base of elytra distinctly wider than base of pronotum, humeral angles moderately protruding anterad, subangulate, margin behind humerus not emarginate. Disc regularly convex,



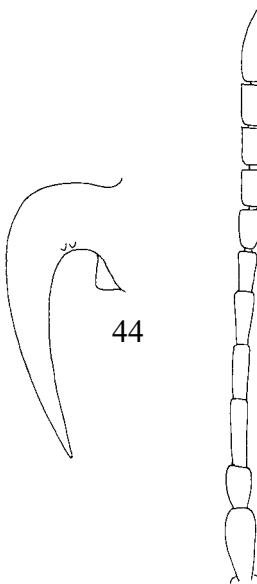
41



42



43



44



45

41-45. *Cassida montana*: 41 - dorsal view, 42 - lateral view, 43 - head and prosternum, 44 - tarsal claw, 45 - antenna

without tubercles, but with low H-shaped elevation in postscutellar point (fig. 42). Postscutellar impressions shallow but distinct, principal impressions hardly marked, no lateral impression; postscutellar impression bordered externally by elevated anterior branches of the H-shaped figure only in posterior half. Posterior branches of the H-shaped figure not prolonged to apex of disc, elytra without longitudinal costae. Punctuation of disc completely regular. Punctures moderately coarse and dense, distance between them as wide as to twice wider than puncture diameter. Punctures in anterior half of disc c. twice coarser than on slope and in postscutellar impressions. Intervals distinct, flat, c. twice wider than rows. Marginal interval distinct, not or only slightly wider than submarginal interval. Punctures in marginal row distinctly coarser than in submarginal one, disposed regularly, very deep, especially in posthumeral area. Surface of disc slightly dull, appears regular, only in posterior half of disc there are some broad and very low transverse folds. Explanate margin broad, c. as wide as half width of disc of each elytron, slightly declivous, its surface slightly irregular, glabrous. Apex of elytral epipleura with several erect hairs.

Clypeus moderately broad, slightly wider than long, flat, smooth, glabrous; clypeal lines fine, visible on whole length of clypeus (fig. 43). Labrum emarginate to 1/4 length. Prosternal collar short, prosternal process strongly expanded apically, in the middle slightly convex, alae impressed, punctate, its surface appears irregular. Antennae slim, length ratio of antennal segments: 100:57:93:77:70:50: 60:57:53:57:93. Segment 3 c. 1.6 times longer than 2, and c. 1.2 times longer than 4, distal segment longer than wide (fig. 45). Claws with small basal tooth (fig. 44).

#### TYPE

Holotype: “M<sup>1</sup> Tsaratanana, 1800 m, forêt de mousses, X-49, R.P. [R. PAULIAN], Inst. Scient. Madagascar” “Type” “Muséum Paris, Coll. Générale” “*Cassida montana* HINCKS TYPE, det. W.D. HINCKS” (preserved in Muséum National d’Histoire Naturelle, Paris).

### *Cassida quadricolorata* n. sp.

#### ETYMOLOGY

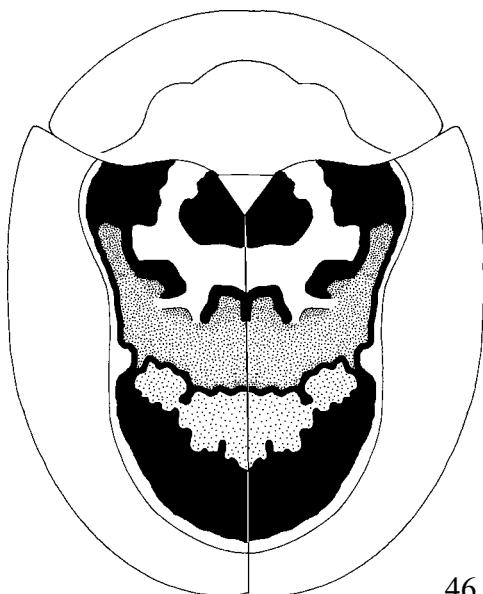
Named after its dorsal colouration of motley yellow, black, reddish-brown and green.

#### DIAGNOSIS

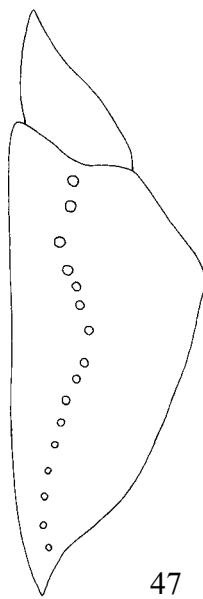
Elytral colouration and sculpture of *C. quadricolorata* are unique and it has no relatives in Madagascan fauna.

#### DESCRIPTION

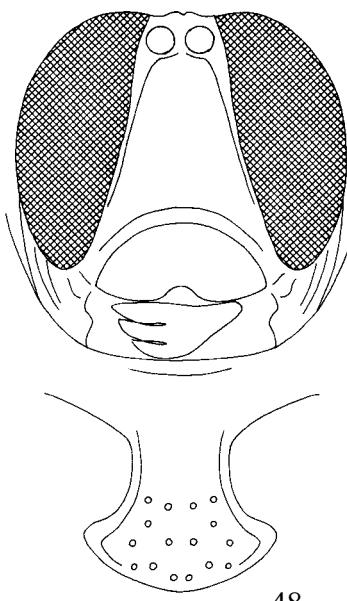
Length: 5.3 mm, width: 4.2 mm, length of pronotum: 1.8 mm, width of pronotum: 3.4 mm, length/width ratio: 1.26, pronotum width/length ratio: 1.89.



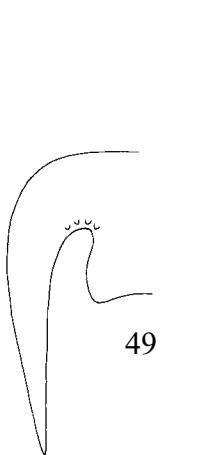
46



47



48



49



50

46-50. *Cassida quadricolorata*: 46 - dorsal view, 47 - lateral view, 48 - head and prosternum, 49 - tarsal claw, 50 - antenna

Pronotum uniformly yellow. Scutellum reddish-brown. Elytral disc with yellow, yellow-green, reddish-brown and black pattern. Yellow is marginal interval and necklace-shaped sculpture in basal part of elytra; yellow-green is transverse irregular sculpture in 3/4 elytral length; reddish-brown forms transverse band between anterior and posterior sculptures; black occupies submarginal interval, anterodorsal part of humeral calli and area between posterior sculpture and submarginal row; on black parts there are some lighter, brownish-black areas. Clypeus, ventrites and legs uniformly yellow. Antennal segments 1-8 yellow, segment 9 yellow with slightly infuscate apex, segments 10-11 black except yellow apex of ventral side of the last segment.

Pronotum broad, c. 1.9 times wider than long, ellyptical, with maximum width in anterior 2/5 length, sides angulate (fig. 46). Disc slightly depressed, indistinctly bordered from explanate margin, with well separated part above head, on sides on border line between disc and explanate margin with small, round impression. Surface of disc smooth and glabrous. Explanate margin subhorizontal, its surface smooth and glabrous.

Scutellum triangular, with obtuse apex, without punctures or sulci. Base of elytra moderately wider than base of pronotum, humeral angles distinctly protruding anterad, subacute, margin behind humerus not emarginate. Disc moderately convex, without tubercles (fig. 47), but with two figures of elytral relief; the first forms necklace-shaped sculpture in basal part of elytra, the second forms transverse, irregular band in 3/4 length of elytra. Postscutellar impressions present, bordered externally by the first figure of elytral relief. Punctuation of disc regular, but rows partly broken by elytral relief. Punctures moderately coarse, in sutural half of disc dense with distance between punctures c. as wide as puncture diameter or slightly narrower, in lateral part of disc punctures sparser with distance between them c. twice wider than puncture diameter. Intervals c. twice wider than rows, mostly flat, only second interval between anterior and posterior sculpture slightly elevated. Marginal interval c. twice wider than submarginal one. Punctures in marginal row c. twice coarser than in submarginal one, disposed regularly. Explanate margin broad, slightly wider than half width of disc of each elytron, subhorizontal, impunctate. Whole surface of disc and explanate margin glabrous. Apex of elytral epipleura bare.

Clypeus narrow, slightly longer than wide, flat, impunctate, glabrous; clypeal lines very fine, well visible only in apical part of clypeus (fig. 48). Labrum emarginate to 1/5 length. Prosternal collar short, prosternal process strongly expanded apically, its apex with few punctures and irregular sulci. Antennae moderately elongate, length ratio of antennal segments: 100:50:67:60:53:40:47:33:37:43:87. Segment 3 c. 1.34 times longer than 2, segment 4 only slightly shorter than 3 (fig. 50). Claws large, with large basal tooth (fig. 49).

#### TYPE

Holotype: "Andranomandevy, Didy 1039 m, Ambatenaiaazaka, X 56, ER." "Type" "Muséum Paris, Coll. Générale" "*Cassida quadricolorata* HINCKS TYPE, det. W.D. HINCKS" (preserved in Muséum National d'Histoire Naturelle, Paris).

***Cassida dolens* n. sp.**

## ETYMOLOGY

Latin “*dolens*” means sorrow, grief; named after its mournful colouration.

## DIAGNOSIS

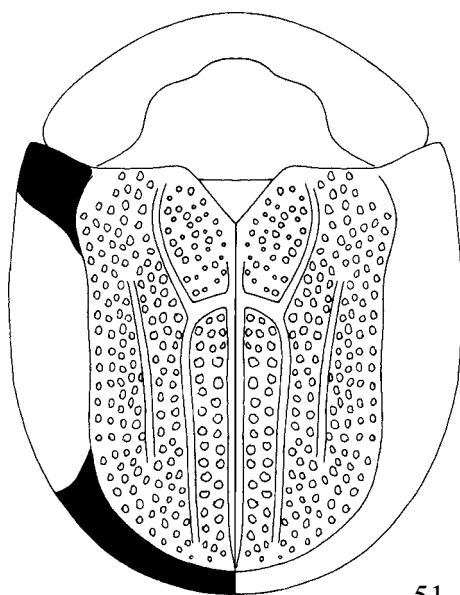
At first glance it is similar to *C. latecincta* FRM. and *C. circumsepta* Sp. All species have base of elytra only slightly wider than base of pronotum, angulate sides of pronotum, irregular surface of pronotal disc and tendency to form dark band along sides of elytral disc. *C. latecincta* differs in uniformly yellow antennae (with black apical segments in *C. dolens*), less irregular pronotal surface and more regular elytral puncturation. *C. circumsepta* differs that only last two antennal segments are black (at least three segments in *C. dolens*), maculate pronotum (immaculate in *C. dolens*) and pronotum with less rounded anterior margin with maximum width slightly before the middle (in the middle in *C. dolens*). *C. bicallosa* Sp. at first glance has elytral pattern similar to some aberrations of *C. dolens* but differs in pronotum distinctly narrower than base of elytra (only slightly narrower in *C. dolens*) and broadly rounded pronotal sides (angulate in *C. dolens*).

## DESCRIPTION

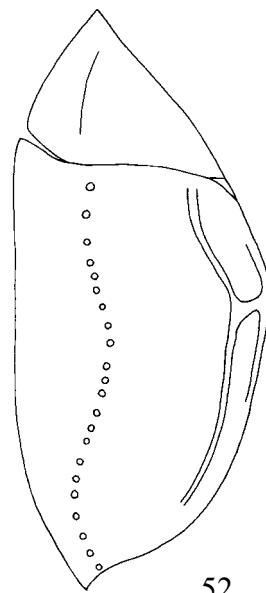
Length: 5.5-6.6 mm, width: 4.7-5.4 mm, length of pronotum: 2.1-2.3 mm, width of pronotum: 4.05-4.50 mm, length/width ratio: 1.17-1.30, pronotum width/length ratio: 1.87-2.05.

Pronotum uniformly yellowish-brown. Scutellum yellowish-brown. Elytral disc with variable pattern, the holotype has area between suture and second elytral costa yellowish-brown with some indistinct darker spots and paler parts of costae, area between second costa and marginal row brownish-black, only humerus with paler spot, explanate margin with broad black humeral spots, and very broad posterolateral spots extending to the suture. In the paratypes elytra are paler, varying from almost uniformly yellowish-brown to variegate; in variegate forms darker brown usually are: spot in front of postscutellar elevation, elongate stripe in 2/3 length of the first elytral costa, and broad band along sides between the second costa and submarginal interval. Marginal interval and explanate margin in paratypes uniformly yellowish-brown. Clypeus yellowish brown, ventrites vary from uniformly yellowish-brown to thorax and abdomen partly black, Legs yellowish-brown; antennal segments 1-7 yellowish brown, remainder segments gradually infuscate, sometimes segment 8 also uniformly yellowish-brown.

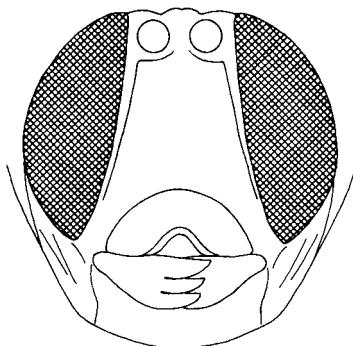
Pronotum broad, c. 1.9 times wider than long, elyptical, with maximum width in the middle, sides angulate (fig. 51). Disc depressed, without border between disc and explanate margin, but sides of disc with small impression; with slightly separated part above head. Surface of disc irregular, with more or less regular longitudinal wrinkles, except almost smooth area above head. Explanate margin slightly declivous, its surface mostly smooth, only on sides in basal part slightly irregular. Whole surface of disc slightly dull, wrinkles partly glabrous.



51



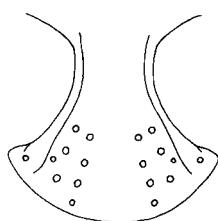
52



53



54



55



55

51-55. *Cassida dolens*: 51 - dorsal view, 52 - lateral view, 53 - head and prosternum, 54 - tarsal claw, 55 - antenna

Scutellum triangular, without punctures or sulci. Base of elytra only slightly wider than base of pronotum, humeral angles moderately protruding anterad, subangulate, margin behind humerus not emarginate. Disc regularly convex, without tubercles, but with moderately high H-shaped elevation in postscutellar point (fig. 52). Postscutellar and principal impressions distinct, deep, no lateral impression; postscutellar impression bordered externally by elevated anterior branches of the H-shaped figure. Posterior branches of the H-shaped figure prolonged to apex of disc, form longitudinal costa. Parallel to the first costa, in the middle of elytron runs the second costa, but in some specimens it is very low or completely obsolete. Puncturation of disc mostly irregular, only in lateral part of disc with tendency to form regular rows; in specimens with dark elytral band punctures on dark parts of elytra more regular than in the same parts of elytra in immaculate specimens. Punctures very coarse and dense, almost touching each other. Punctures in anterior half of disc not or only slightly coarser than in posterior half of disc. Intervals, except costae, linear or obsolete. Marginal interval distinct. Punctures in marginal row c. twice to thrice coarser than in submarginal one, disposed regularly. Surface of disc appears irregular. Explanate margin broad, slightly narrower than half width of disc of each elytron, declivous, its surface smooth to slightly irregular. Surface of elytra from slightly glabrous to slightly dull, dark parts of elytra usually dull, immaculate specimens mostly slightly glabrous. Apex of elytral epipleura in fresh specimens with sparse, erect hairs, in old dried specimens they are mostly broken and epipleura appear bare.

Clypeus moderately broad, c. 1.2 wider than long, flat, smooth, glabrous; clypeal lines fine, visible on whole length of clypeus (fig. 53). Labrum emarginate to 1/4-1/3 length. Prosternal collar short, prosternal process strongly expanded apically, in the middle slightly convex, alae impressed, punctate, their surface appears irregular. Antennae moderately elongate, length ratio of antennal segments: 100:57:93:86:71:61:61:54:61:61:110. Segment 3 c. 1.6 times longer than 2, and slightly longer than 4 (fig. 55). Claws with very small basal tooth, appear simple (fig. 54).

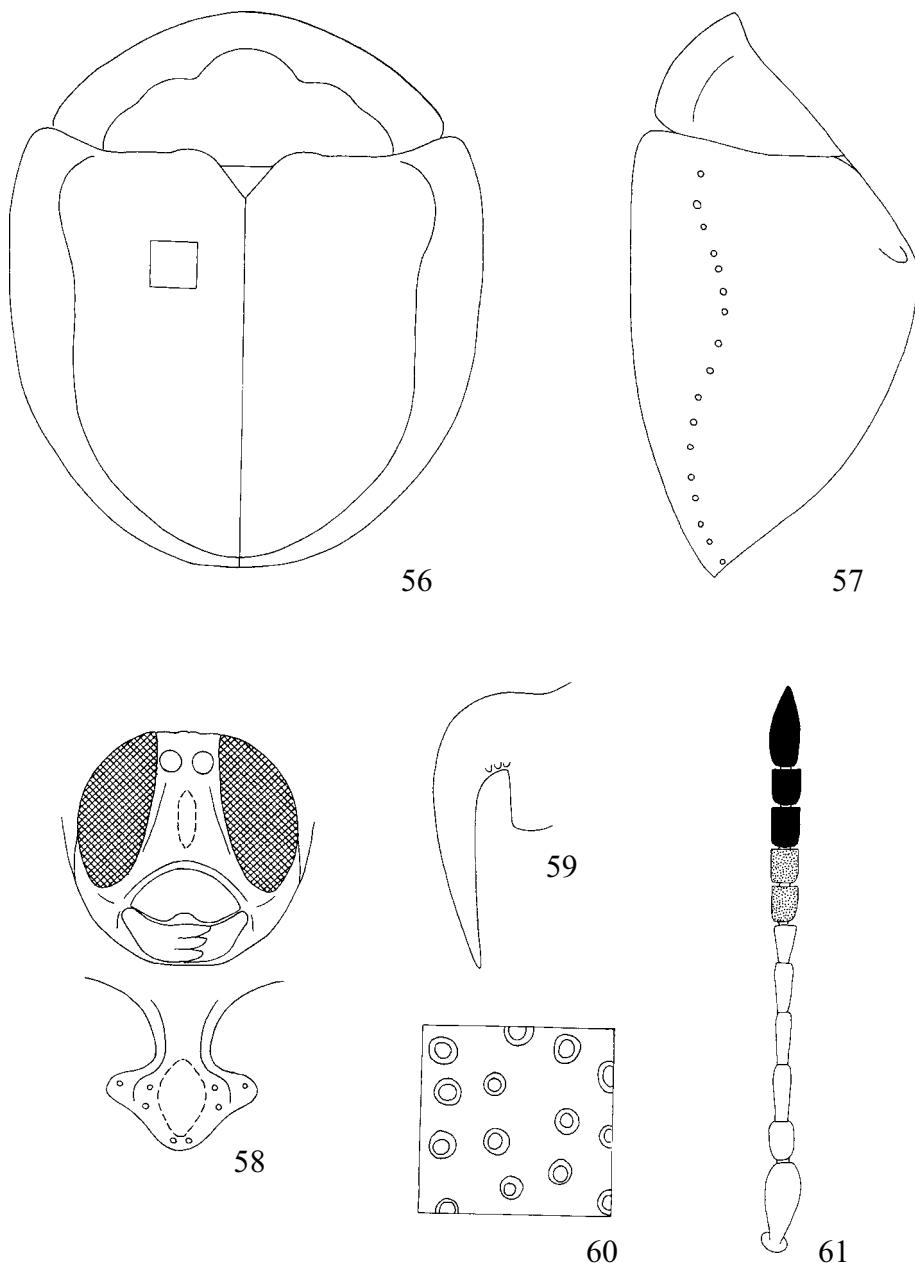
#### TYPE

Holotype: "Hera, Ankazoabo" "Type" "Muséum Paris, Coll. Générale" "*Cassida dolens* HINCKS TYPE, det. W.D. HINCKS" (preserved in Muséum National d'Histoire Naturelle, Paris); 6 paratypes: "Madagascar" (5 Department of Systematic Zoology and Zoogeography, University of Wrocław, 1 Manchester Museum).

### *Cassida scymnooides* n. sp.

#### ETYMOLOGY

Named after its external similarity to the members of the coccinellid genus *Scymnus*.



56-61. *Cassida scymnoides*: 56 - dorsal view, 57 - lateral view, 58 - head and prosternum, 59 - tarsal claw, 60 - puncturation of central part of elytra, 61 - antenna

## DIAGNOSIS

Very distinct species, the only one with the following combination of characters: elytra mostly black, dorsal surface covered by adherent hairs and elytral puncturation completely irregular. Other mostly black, small Madagascan species – *C. currax* Sp., *C. tenax* Sp. and *C. atrorubra* n. sp. - differ in elytral puncturation regular and bare surface of elytra.

## DESCRIPTION

Length: 5.0 mm, width: 4.1 mm, length of pronotum: 1.8 mm, width of pronotum: 3.4 mm, length/width ratio: 1.22, pronotum width/length ratio: 1.89. Body almost regularly circular.

Pronotum bicoloured, basal half black and anterior part yellowish-brown, but the border between dark and pale parts gradually changes from black, through brown, to yellow. Scutellum black with brownish apex. Elytra mostly black, explanate margin brownish-black, only extreme margin yellow. Clypeus yellow, thorax black, abdomen in central part brown to black, margins yellow. Legs yellow. Antennal segments 1-6 yellow, segments 7-8 infuscate, 9-11 black.

Pronotum broad, c. 1.9 times wider than long, elyptical, with maximum width slightly behind the middle, sides narrowly rounded (fig. 56). Disc only slightly convex, indistinctly bordered from explanate margin, with slightly separated area above head. Whole surface of disc slightly longitudinally wrinkled, irregular, only area above head slightly irregular. Explanate margin declivous, its surface slightly irregular. Whole surface of pronotum slightly opaque, covered by very sparse, adherent hairs.

Scutellum triangular, without punctures or sulci, its surface dull. Base of elytra almost as wide as pronotum, humeral angles rounded, moderately protruding anterad, margin behind humerus not emarginate. Disc moderately, regularly convex, not elevated in postscutellar point (fig. 57). Postscutellar impressions very shallow, bordered externally by very low elevation, no other impressions. Puncturation of disc completely irregular. Puncturation fine and dense, distance between punctures from slightly narrower to almost twice wider than puncture diameter (fig. 60). Marginal row distinct, its punctures much coarser than in central part of disc. Space between punctures smooth, surface of elytra appears regular. Marginal interval absent. Explanate margin narrow, c. thrice narrower than width of disc of each elytron, declivous, its surface shallowly punctate, appears irregular. Surface of elytra slightly opaque, covered by very sparse, short, adherent hairs. Apex of elytral epipleura with short, erect hair.

Clypeus narrow, only slightly wider than long, flat, impunctate, glabrous; clypeal lines fine, visible on whole length of clypeus, converging in triangle with obtuse apex. Labrum emarginate to 1/5 length. Prosternal collar moderately long, prosternal process distinctly expanded apically, central part of apex elevated, sides impressed, surface with few punctures. Antennae moderately elongate, length ratio of antennal segments: 100:46:75:75:70:43:57:46:50:50:93. Segment

3 c. 1.6 times longer than 2, segment 4 as long as 3 (fig. 61). Claws moderately large, with small basal tooth (fig. 59).

#### TYPE

Holotype: "Ambohinasoa, 29-7-48, A.R., Inst. Scient. Madagascar" "Type" "Muséum Paris, Coll. Générale" "*Cassida scymnoides* HINCKS TYPE, det. W.D. HINCKS" (preserved in Muséum National d'Histoire Naturelle, Paris).

### *Cassida atrorubra* n. sp.

#### ETYMOLOGY

Named after black and reddish colouration of pronotum and elytra.

#### DIAGNOSIS

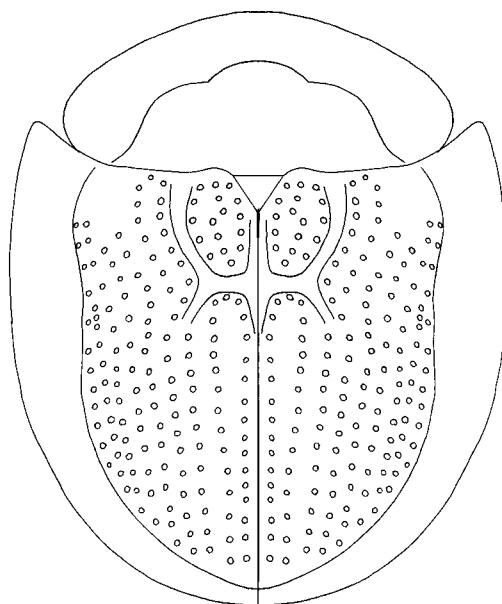
Mostly black pronotum and elytra and circular body place it close to *C. currax* Sp., *C. tenax* Sp. and *C. scymnoides* n. sp. The latter species distinctly differs in pubescent elytra (bare in *atrorubra*) and irregular elytral puncturation (regular in *atrorubra*). *C. tenax* differs in larger size (length exceeding 5.6 mm, in *atrorubra* below 4.9 mm), pronotum with subangulate sides (rounded in *atrorubra*) and wrinkled surface of pronotal disc (punctate in *atrorubra*). *C. currax* at first glance is the most similar especially in body shape but differs in dorsal surface with yellow, sharply bordered from black ground colour (reddish with diffuse borders in *atrorubra*), explanate margin of elytra usually with small yellow "window" (without "window" in *atrorubra*) and wrinkled surface of pronotal disc. Dorsal surface in *C. currax* is slightly dull while in *C. atrorubra* it is glabrous.

#### DESCRIPTION

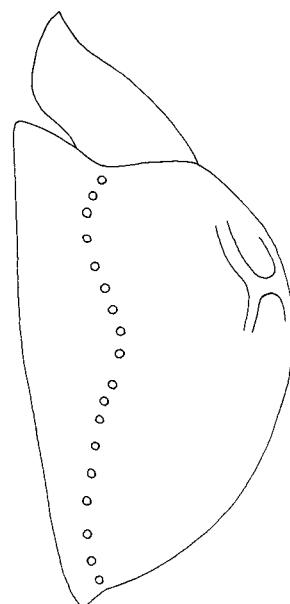
Length: 4.35-4.80 mm, width: 3.7-4.0 mm, length of pronotum: 1.60-1.75 mm, width of pronotum: 2.9-3.2 mm, length/width ratio: 1.18-1.20, pronotum width/length ratio: 1.81-1.83.

Pronotal disc black, explanate margin mostly reddish only area in front of head yellow. Elytral disc black, explanate margin along border of disc blackish, externally reddish, the border between black and red diffuse. Clypeus yellow, thorax and abdomen black, sides of abdomen and apex of the last sternite narrowly yellow. Legs yellow. Antennal segments 1-7 yellow, segments 8-11 black, or segment 8 yellow, segment 9 brownish and only segments 10-11 black.

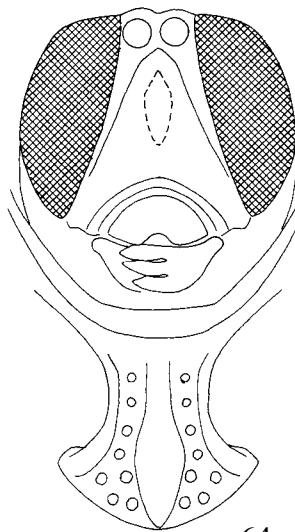
Pronotum broad, c. 1.8 times wider than long, elyptical, with maximum width in the middle, sides broadly rounded (fig. 62). Disc only slightly convex, on sides distinctly bordered from explanate margin by sharp sulcus, with slightly separated area above head. Surface of disc in front of scutellum with two short, oblique impressions, except area above head with sparse puncturation, some



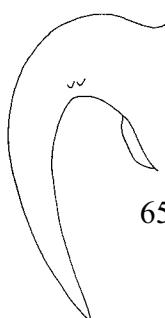
62



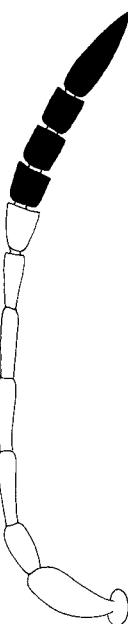
63



64



65



66

62-66. *Cassida atrorubra*: 62 - dorsal view, 63 - lateral view, 64 - head and prosternum, 65 - tarsal claw, 66 - antenna

punctures have tendency to form longitudinal sulci but surface does not appear wrinkled. Explanate margin slightly declivous, its surface smooth and glabrous.

Scutellum triangular, without punctures or sulci. Base of elytra distinctly wider than pronotum, humeral angles angulate, distinctly protruding anterad, margin behind humerus not emarginate. Disc moderately, regularly convex, in postscutellar point with H-shaped elevation (fig. 63). Postscutellar impressions distinct, bordered externally by anterad protruding anterior branches of the H-shaped elevation, also distinct small, round principal impression. Punctuation of disc completely regular. Punctuation fine and moderately dense, distance between punctures as wide as to twice wider than puncture diameter. Punctures in anterior half of disc as coarse as in posterior half. Marginal row distinct, its punctures much coarser than in central part of disc. Intervals flat, twice to thrice wider than rows, marginal interval narrower than submarginal one. Surface of intervals smooth, glabrous. Explanate margin narrow, c. thrice narrower than width of disc of each elytron, declivous, its surface shallowly punctate, appears irregular but glabrous. Apex of elytral epipleura with several short, erect hair.

Clypeus narrow, slightly longer than wide, flat, impunctate, glabrous, apex with narrow longitudinal impression; clypeal lines fine, visible on whole length of clypeus, converging in triangle (fig. 64). Labrum emarginate to 1/5 length. Prosternal collar moderately long, prosternal process distinctly expanded apically, central part of apex elevated, sides impressed, with several punctures. Antennae moderately elongate, length ratio of antennal segments: 100:57:71:75:71:60:54:58: 50:54:108. Segment 3 c. 1.25 times longer than 2 (fig. 66), segment 4 slightly longer than 3. Claws moderately large, with small basal tooth (fig. 65).

#### TYPES

Holotype: "MADAGASCAR, Fia., Ranomafana, 10.IX.1996"; paratype: "MADAGASCAR, Fia., Amabatolahy, 14.IX.1996" (both preserved at the Department of Systematic Zoology and Zoogeography, University of Wrocław).

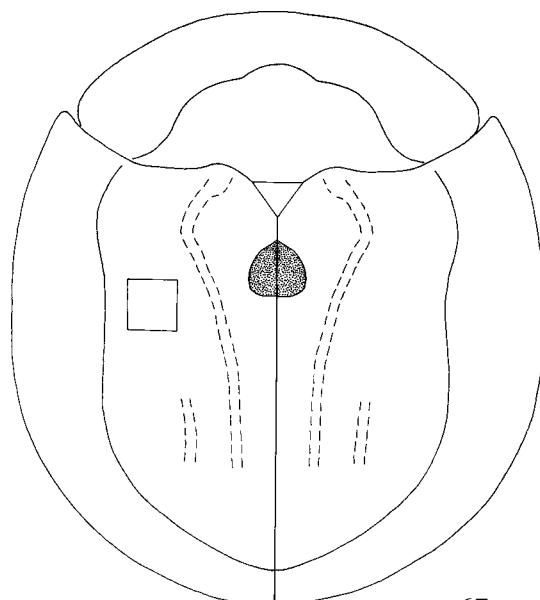
### *Cassida seniculoides* n. sp.

#### ETYMOLOGY

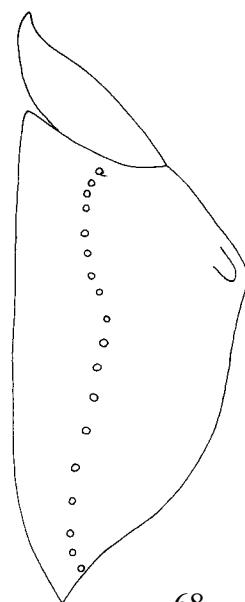
Named after its external similarity to *Cassida senicula* Sp.

#### DIAGNOSIS

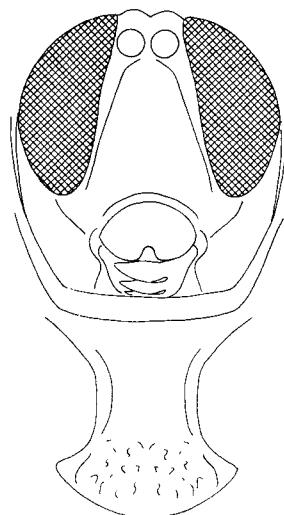
At first glance it is similar only to *C. senicula* Sp. Both species have pronotum and elytra mostly yellow with brown round spot in postscutellar point. *C. seniculoides* distinctly differs in whole dorsal surface covered by short erect setae (bare in *senicula*), and irregular, granulate surface of pronotal disc (almost smooth in *senicula*). *C. strigaticollis* Bor. has similar body colouration but differs in longitudinally striated pronotal disc (granulate in *seniculoides*) and base of



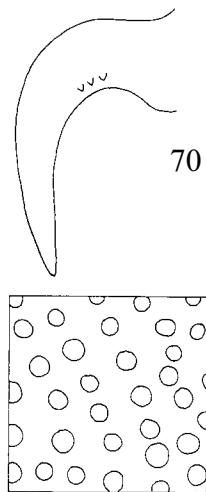
67



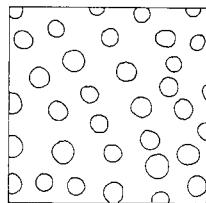
68



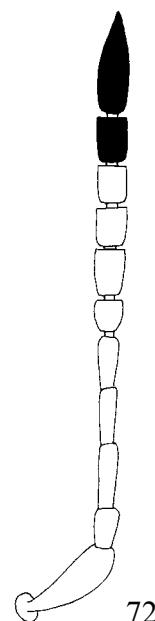
69



70



71



72

67-72. *Cassida seniculoides*: 67 - dorsal view, 68 - lateral view, 69 - head and prosternum, 70 - tarsal claw, 71 - puncturation of central part of elytra, 72 - antenna

elytra much wider than pronotum (slightly wider in *seniculoides*). The setose dorsal surface in *C. seniculoides* is unique within Madagascan members of the genus *Cassida*, similarly setose pronotum and elytra occur in African *C. innotata* Boh. but it belongs to a different species group with strongly appendiculate tarsal claws (simple in *seniculoides*).

#### DESCRIPTION

Length: 5.5-5.9 mm, width: 4.9-5.2 mm, length of pronotum: 1.9-2.0 mm, width of pronotum: 3.65-3.90 mm, length/width ratio: 1.10-1.13, pronotum width/length ratio: 1.90-1.95.

Pronotum uniformly yellow. Scutellum yellow. Elytra yellow with brown, round spot in postscutellar point. Clypeus, ventrites and legs uniformly yellow. Antennal segments 1-8 yellow, segment 9 infuscate apically, segments 10-11 black except yellow apex of ventral side of the last segment.

Pronotum broad, c. 1.9 times wider than long, ellyptical, with maximum width in the middle, sides narrowly rounded (fig. 67). Disc moderately convex, on sides distinctly bordered from explanate margin, area above head and lateral lobes well separated. Whole surface of disc irregularly granulate, only area above rather irregular than granulate. Explanate margin subhorizontal, its surface irregular but granule smaller than on disc. Whole surface of pronotum slightly glabrous, covered by sparse, short, erect setae.

Scutellum triangular, without punctures or sulci. Base of elytra slightly wider than base of pronotum, humeral angles angulate, distinctly protruding anterad, margin behind humerus not emarginate. Disc moderately convex, slightly elevated in postscutellar point but without tubercle, elytral profile behind top of convexity slightly concave (fig. 68). Postscutellar impressions distinct, bordered externally by slightly elevated second interval. Punctuation of disc mostly irregular, only in sutural part and area behind humerus punctures have tendency to form regular rows. Punctuation moderately coarse and dense, distance between punctures 0.3-1.2 times wider than puncture diameter (fig. 71). Marginal row distinct, its punctures c. twice coarser than in central part of disc. Intervals mostly indistinct, only second interval forms more or less visible longitudinal elevation, also fourth interval in 3/4 length of elytron forms short longitudinal elevation. Marginal interval distinct. Surface of elytra appears slightly irregular, slightly glabrous, covered by sparse, moderately long, erect setae. Explanate margin broad, as wide as 2/3 width of disc of each elytron, subhorizontal, its surface irregular but slightly glabrous. Apex of elytral epipleura with moderately long, erect hair.

Clypeus narrow, c. as long as wide, flat, with only few very shallow punctures, slightly dull; clypeal lines fine, but visible on whole length of clypeus, converging in a triangle with obtuse apex (fig. 69). Labrum very shallowly emarginate. Prosternal collar moderately long, prosternal process distinctly expanded apically, its apex impunctate, with slightly irregular surface. Antennae moderately elongate, length ratio of antennal segments: 100:47:73:70:50:43:47:43

:43:53:103. Segment 3 c. 1.57 times longer than 2, segment 4 slightly shorter than 3 (fig. 72). Claws large, simple, micropectinate (fig. 70).

#### TYPE

Holotype and paratype: "Madagascar Soalala" (preserved in Muséum National d'Histoire Naturelle, Paris); paratype: "W MADAGASCAR, near Soalala" (at the Department of Systematic Zoology and Zoogeography, University of Wrocław).

### *Cassida pubipennis* n. sp.

#### ETYMOLOGY

Named after pubescent elytra.

#### DIAGNOSIS

At first glance it is similar to *C. seniculoides* n. sp. and *C. senicula* Sp., especially in almost uniformly yellow dorsal surface with dark spot in postscutellar point. *C. pubipennis* differs in less circular body, with sides of elytra only slightly rounded (regularly rounded in both its relatives), from *C. senicula* it differs also in pubescent pronotum and elytra (bare in *senicula*), and from *C. seniculoides* in adherent elytral and pronotal pubescence (erect in *seniculoides*). Pattern in postscutellar point in *C. pubipennis* forms two short black stripes, while in both its relatives it forms round brown spot.

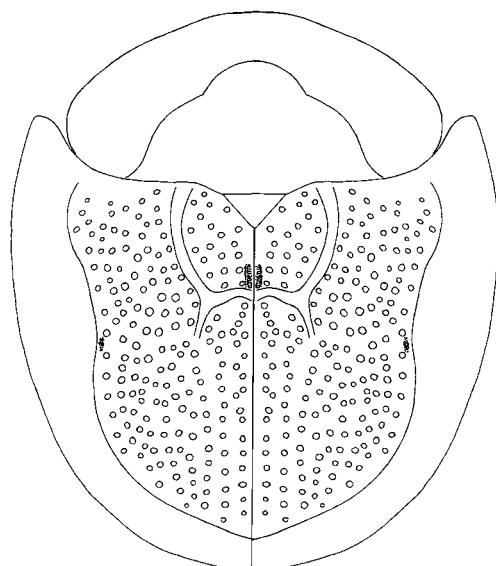
#### DESCRIPTION

Length: 6.4 mm, width: 5.3 mm, length of pronotum: 2.3 mm, width of pronotum: 4.15 mm, length/width ratio: 1.21, pronotum width/length ratio: 1.80.

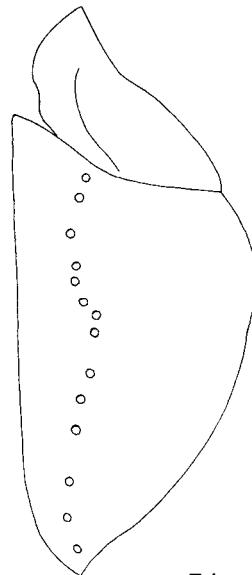
Pronotum uniformly yellow. Scutellum yellow. Elytra mostly yellow with two short, black stripes in postscutellar point, very small black spot in the middle of submarginal interval, and few extremely small black spots distributed irregularly in anterior half of disc. Clypeus, ventrites and legs uniformly yellow. Antennal segments 1-7 yellow, segments 8-11 infuscate.

Pronotum moderately broad, c. 1.8 times wider than long, ellyptical, with maximum width slightly behind the middle, sides rounded (fig. 73). Disc distinctly convex, on sides distinctly bordered from explanate margin, area above head and lateral lobes well separated. Whole surface of disc slightly irregular, sides with oblique impression. Explanate margin subhorizontal, its surface slightly irregular. Whole surface of pronotum slightly dull, covered by sparse, adherent hairs.

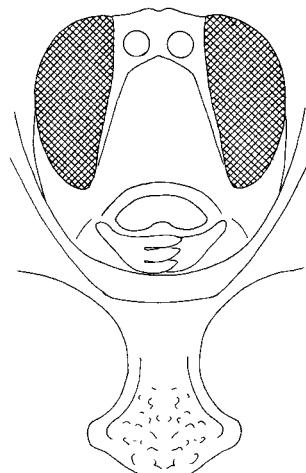
Scutellum triangular, without punctures or sulci. Base of elytra moderately wider than base of pronotum, humeral angles subangulate, distinctly protruding anterad, margin behind humerus not emarginate. Disc moderately convex, not



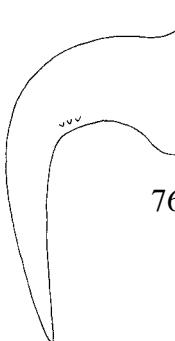
73



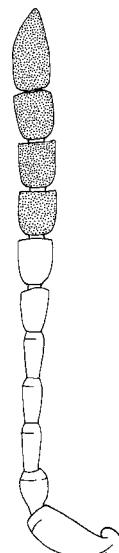
74



75



76



77

73-77. *Cassida pubipennis*: 73 - dorsal view, 74 - lateral view, 75 - head and prosternum, 76 - tarsal claw, 77 - antenna

elevated in postscutellar point (fig. 74). Postscutellar impressions distinct, bordered externally by distinct elevation. Punctuation of disc almost completely irregular, only in area behind humerus punctures have tendency to form regular rows. Punctuation moderately coarse and dense, distance between punctures 0.3-0.9 times as wide as puncture diameter. Marginal row distinct, its punctures c. thrice coarser than in central part of disc. Intervals absent, surface of elytra appears irregular. Marginal interval distinct. Explanate margin moderately broad, as wide as half width of disc of each elytron, subhorizontal, its surface irregular. Whole surface of elytra slightly dull, covered by sparse, short, adherent hairs. Apex of elytral epipleura with moderately long, erect hair.

Clypeus narrow, c. 1.1 times wider than long, flat, impunctate, slightly dull; clypeal lines very fine, well visible only in basal 2/3 length (fig. 75). Labrum shallowly emarginate. Prosternal collar distinct, prosternal process distinctly expanded apically, central part of apex depressed, sides elevated, surface impunctate, slightly irregular. Antennae moderately elongate, length ratio of antennal segments: 100:50:67:60:57:53:60:57:57:60:113. Segment 3 c. 1.33 times longer than 2, segment 4 slightly shorter than 3 (fig. 77). Claws large, simple, micropectinate (fig. 76).

#### TYPE

Holotype: "MADAGASCAR, Mahatsinjo" (at the Department of Systematic Zoology and Zoogeography, University of Wrocław).

#### ACKNOWLEDGEMENTS

I would like to express my sincere thanks to Dr. N. BERTI (Muséum National d'Histoire Naturelle, Paris) and Dr. C. JOHNSON (Manchester Museum, Manchester) for the loan of the specimens. I am also grateful to Dr. S. DOGUET (Fonetary-sous-bois, France) to make me a present of the small collection of Madagascan *Cassidinae*.

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